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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/587,228	LIU, ENHUI	
	Examiner	Art Unit	
	BENJAMIN ELLIOTT	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *2 and 3* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to amendments/arguments filed 5/19/2009. Claims 1-40 have been examined and are pending. Claims 2-3 have been canceled. Claims 21-40 are newly entered claims, and no new matter has been added.

Claim Rejections - 35 USC § 112

2. In light of newly amended claims and Applicant's arguments, rejection of claims 4, 5, and 17-19 have been withdrawn.

Allowable Subject Matter

3. The indicated allowability of claim 10 is withdrawn in view of the newly discovered reference(s) to Morford in view of Melaku. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4-9, and 17-22 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent 7,496,661 B1 to Morford et al. (hereinafter "Morford").

Regarding Claim 1, Morford discloses **a method for providing quality of service (QoS) guarantee** (Morford: Abstract), **wherein the method comprises the steps of:**

creating a service traffic flow classification table (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.);

establishing a plurality of label switching paths (Morford: Figure 1);

configuring the attributes of the label switching paths (Morford: Col. 3, lines 55-66. (LSPs can be configured for non-real-time and real-time traffic.);

obtaining service traffic flow information of a service traffic flow from a service control equipment (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **the service control equipment notifying of changes of the service traffic flow** (Morford: Col. 7, lines 18-26. Traffic is marked if it falls below a threshold.);

updating dynamically table entries of the service traffic flow classification table according to the obtained service traffic flow information (Morford: Col. 12, lines 29-34 and lines 52-58. Traffic classes are automatically created and stored in a database.);

classifying and conditioning the service traffic flows entering into a core network at a downlink interface of an edge router according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.); **forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths** (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 4, Morford discloses **the method according to claim 1, wherein the step of obtaining service traffic flow information is: directly obtaining the service traffic flow information from the service control equipment** (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.).

Regarding Claim 5, Morford discloses **the method according to claim 1, wherein the step of obtaining service traffic flow information is: obtaining the service traffic flow information from the service control equipment through a resource control equipment, the resource control equipment distributing route and resource according to Qos requirements of the service traffic flow** (Morford: Col. 3, lines 61-67 and Col. 4, lines 1-3. RSVP is used for the paths with QoS restraints.).

Regarding Claim 6, Morford discloses **the method according to claim 1, wherein the step of establishing a plurality of label switching paths is: configuring the label switching paths statically at the uplink interface of the edge router** (Morford: Col. 9, lines 50-61. Administrator may supply labels to packets for forwarding. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 7, Morford discloses **the method according to claim 1, wherein the step of establishing a plurality of label switching paths is: establishing the label switching paths dynamically via constraint- routing label distribution protocol (CR-LDP) or resource reservation protocol-traffic engineering (RSVP-TE) at the uplink interfaces of the edge router** (Morford: Col. 3, lines 61-65. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 8, Morford discloses **the method according to claim 1, wherein the step of establishing a plurality of label switching paths further comprises the step of:**
constructing an edge-to-edge label switching path concatenated pipe or a virtual multi- protocol label switching network on the core network by using the label switching paths (Morford: Col. 4, lines 23-25. The core network is MPLS based.).

Regarding Claim 9, Morford discloses **the method according to claim 1, wherein the step of configuring the attributes of the label switching paths is: configuring traffic class** (Morford: Col. 7, lines 16-18. Data flows are marked by

class.), **priority** (Morford: Col. 6, lines 46-48), **QoS class** (Morford: Col. 6, lines 46-48. QoS may be delay, jitter, or loss.), **bandwidth attribute of the label switching paths by network capacity planning and traffic engineering statistics** (Morford: Col. 6, lines 50-59).

Regarding Claim 20, Morford discloses **the method according to claim 1, wherein the core network is an IP network** (Morford: Figure 1).

Regarding Claim 17, Morford discloses **an apparatus for providing quality of service (QoS) guarantee** (Morford: Abstract), **wherein the apparatus comprises:**
a service traffic flow information obtaining means (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **for creating a service traffic flow classification table** (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.), **obtaining service traffic flow information of a service traffic flow from a service control equipment notifying of changes of the service traffic flow** (Morford: Col. 7, lines 18-26. Traffic is marked if it falls below a threshold.), **and updating dynamically table entries of the service traffic flow classification table according to the obtained service traffic flow information** (Morford: Col. 12, lines 29-34 and lines 52-58. Traffic classes are automatically created and stored in a database.);
a label switching path establishing means, for establishing a plurality of label switching paths (Morford: Figure 1);

a label switching path configuring means, for configuring the attributes of the label switching paths (Morford: Col. 4, lines 23-25. the core network is MPLS-based and uses a QoS mechanism such as DiffServ.);

a first performing means, for classifying and conditioning service traffic flows entering a core network according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.);

and a second performing means, for forwarding the processed service traffic flows according to the attributes of the label switching paths (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 21, Morford in view of Melaku discloses **the apparatus according to claim 17, wherein the service traffic flow information of a service traffic flow is obtained directly from the service control equipment or from the service control equipment through a resource control equipment, the resource control equipment distributing route and resource according to QoS requirements of the service traffic flow** (Morford: Col. 3, lines 61-67 and Col. 4, lines 1-3. RSVP is used for the paths with QoS restraints.).

Regarding Claim 18, Morford discloses **an edge router for providing quality of service (QoS) guarantee** (Morford: Abstract; Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **comprises a configuration management interface** (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **wherein the edge router further comprises:**

a service traffic flow information obtaining means (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **for creating a service traffic flow classification table** (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.), **obtaining service traffic flow information of a service traffic flow from a service control equipment notifying of changes of the service traffic flow** (Morford: Col. 7, lines 18-26. Traffic is marked if it falls below a threshold.), **and updating dynamically table entries of the service traffic flow classification table according to the obtained service traffic flow information** (Morford: Col. 12, lines 29-34 and lines 52-58. Traffic classes are automatically created and stored in a database.);

a label switching path establishing means, for establishing a plurality of label switching paths (Morford: Figure 1);

a label switching path configuring means, for configuring the attributes of the label switching paths (Morford: Col. 4, lines 23-25. the core network is MPLS-based and uses a QoS mechanism such as DiffServ.);

a first performing means, for classifying and conditioning the service traffic flows entering into the core network according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.);

and a second performing means, for forwarding the processed service traffic flow according to the attributes of the label switching paths (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 22, Morford discloses **the apparatus according to claim 17, wherein the service traffic flow information of a service traffic flow is obtained directly from the service control equipment or from the service control equipment through a resource control equipment, the resource control equipment distributing route and resource according to QoS requirements of the service traffic flow** (Morford: Col. 3, lines 61-67 and Col. 4, lines 1-3. RSVP is used for the paths with QoS restraints.).

Regarding Claim 19, Morford discloses **a system for providing quality of service (QoS) guarantee** (Morford: Abstract), **comprises a service control equipment, a resource control equipment, and an edge router** (Morford: Col. 8,

lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **wherein the edge router comprises:**

a service traffic flow information obtaining means (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **for creating a service traffic flow classification table** (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.), **obtaining service traffic flow information of a service traffic flow from a service control equipment notifying of changes of the service traffic flow** (Morford: Col. 7, lines 18-26. Traffic is marked if it falls below a threshold.), **and updating dynamically table entries of the service traffic flow classification table according to the obtained service traffic flow information** (Morford: Col. 12, lines 29-34 and lines 52-58. Traffic classes are automatically created and stored in a database.);

a label switching path establishing means, for establishing a plurality of label switching paths (Morford: Figure 1);

a label switching path configuring means, for configuring the attributes of the label switching paths (Morford: Col. 4, lines 23-25. the core network is MPLS-based and uses a QoS mechanism such as DiffServ.);

a first performing means, for classifying and conditioning the service traffic flows entering into the core network according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink

stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.);

and a second performing means, for forwarding the processed service traffic flow according to the attributes of the label switching paths (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 10-16 and 23-40 rejected under 35 U.S.C. 103(a) as being unpatentable over Morford in view of United States Patent Application Publication 2003/0074443 A1 to Melaku et al (hereinafter "Melaku").

Regarding Claim 10, Morford discloses **the method according to claim 1, wherein the service traffic flow classification table comprises: service traffic flow identification** (Morford: Col. 29, lines 48-53. Traffic class) **and bandwidth requirement** (Morford: Col. 30, lines 1-5. Bandwidth utilization).

Morford is silent on storing priority, QoS class, and path information.

Melaku discloses a data base that is updated dynamically in real-time based traffic conditions and QoS related status information (Melaku: [0051]). Quality of service is provided to routers at the edge of a network (Melaku: [0010]). Melaku also discloses this information to be flow ids, priority levels, service types, and QoS parameters (Melaku: Figure 3, [0055]). Further, Melaku discloses paths are grouped based on the database resources (Melaku: [0056]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 11, Morford in view of Melaku discloses **the method according to claim 10, wherein the step of classifying and conditioning the service traffic flows entering into a core network at a downlink interface of an**

edge router according to the service traffic flow classification table comprises the steps of:

obtaining a service traffic flow identification of the service traffic flow entering into the core network (Morford: Col. 10, lines 10-12. Attribute identifiers include service IDs.);

looking up the service traffic flow classification table according to the service traffic flow identification (Morford: Col. 11, lines 55-62 and Col. 12, lines 29-34. Traffic class comprises matching rules stored in a database.);

classifying and conditioning the service traffic flows entering into the core network according to the corresponding service traffic flow information in the service traffic flow classification table (Morford: Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.).

Regarding Claim 12, Morford in view of Melaku discloses **the method according to claim 11, wherein the step of classifying and conditioning the service traffic flows entering into the core network according to the corresponding service traffic flow information in the service traffic flow classification table comprises the steps of:**

classifying and marking the service traffic flows according to the corresponding priority and QoS class (Morford: Col. 6, lines 62-67 and Col. 7, lines 1-6. The differentiated services network performs relative priority marking and service class marking.);

shaping and policing the service traffic flows according to the corresponding bandwidth requirement (Morford: Col. 11, lines 17-21. Bandwidth is managed by a default bandwidth management policy.);

selecting the forwarding mode and path of the service traffic flows according to the corresponding outgoing aggregation path information (Morford: Figure 2C. The router may select either access link 21a or 21 b.).

Regarding Claim 13, Morford in view of Melaku discloses **the method according to claim 12, wherein the forwarding mode of the service traffic flow comprises:**

best-effort delivery in accordance with network protocols (Morford: Col. 4, lines 45-50. MPLS may have a QoS class for best-effort traffic.);

delivery through the corresponding label switching paths of this class of traffic (Morford: Col. 7, lines 23-26. A traffic flow may be downgraded (to a lower class of service).).

Regarding Claim 14, Morford in view of Melaku discloses **the method according to claim 13, wherein the step of forwarding the processed service traffic flow by an uplink interface of the edge router according to the attributes of the label switching paths comprises:**

steering the service traffic flow to the egress router of the core network via network protocols when the best-effort delivery in accordance with network protocols is selected as the forwarding mode of the service traffic flow (Morford: Col. 8, lines 3-5. Network may not be differentiated service domain.);

steering the service traffic flow to the egress router of the core network through the label switching path concatenated pipe or the virtual multi-protocol label switching network when the delivery through the corresponding label switching path of this class of traffic is selected as the forwarding mode of the service traffic flow (Morford: Col. 4, lines 23-25. The core network is MPLS based.).

Regarding Claim 15, Morford discloses **the method according to claim 1,** but is silent on modifying the table if the traffic flow changes.

Melaku discloses **wherein the method further comprises the step of: modifying the service traffic flow classification table according to change of the service traffic flow when the service traffic flow is changed** (Melaku: [0056]. The database is dynamically updated based on service parameters or changes in services.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 16, Morford in view of Melaku discloses **the method according to claim 15, wherein the step of modifying the service traffic flow classification table when the service traffic flow is changed comprises: obtaining and adding the service traffic flow information of a service session into the service traffic flow classification table when the session is established** (Melaku: [0049]. The mobile user is registered. [0052]. The traffic monitor determines

the network elements for the mobile user.);

canceling the service traffic flow information of the service session from the service traffic flow classification table when the service session is ended (Melaku: [0062]. The presence of a user is determined (and thus absence).).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 23, Morford discloses **a method for providing quality of service (QoS) guarantee, wherein the method comprises the steps of:**

creating a service traffic flow classification table (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.);

establishing a plurality of label switching paths (Morford: Figure 1);

configuring the attributes of the label switching paths (Morford: Col. 3, lines 55-66. (LSPs can be configured for non-real-time and real-time traffic.);

classifying and conditioning the service traffic flows entering into a core network at a downlink interface of an edge router according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B),

thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.); **forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths** (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **wherein the service traffic flow classification table comprises: service traffic flow identification** (Morford: Col. 29, lines 48-53. Traffic class) **and bandwidth requirement** (Morford: Col. 30, lines 1-5. Bandwidth utilization).

Morford is silent on storing priority, QoS class, and path information.

Melaku discloses a data base that is updated dynamically in real-time based traffic conditions and QoS related status information (Melaku: [0051]). Quality of service is provided to routers at the edge of a network (Melaku: [0010]). Melaku also discloses this information to be flow ids, priority levels, service types, and QoS parameters (Melaku: Figure 3, [0055]). Further, Melaku discloses paths are grouped based on the database resources (Melaku: [0056]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 24, Morford in view of Melaku discloses **the method according to claim 23, wherein the step of creating a service traffic flow classification table comprises the steps of:**

obtaining service traffic flow information (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.);

creating the service traffic flow classification table according to the obtained service traffic flow information (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.).

Regarding Claim 25, Morford in view of Melaku discloses **the method according to claim 24, wherein the step of obtaining service traffic flow information is:**

configuring the service traffic flow information statically (Morford: Col. 9, lines 50-61. Administrator may configure the service traffic flow.).

Regarding Claim 26, Morford in view of Melaku discloses **the method according to claim 24, wherein the step of obtaining service traffic flow information is: directly obtaining the service traffic flow information from a service control equipment** (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.).

Regarding Claim 27, Morford in view of Melaku discloses **the method according to claim 24, wherein the step of obtaining service traffic flow information is: obtaining the service traffic flow information from the service**

control equipment through a resource control equipment (Morford: Col. 3, lines 61-67 and Col. 4, lines 1-3. RSVP is used for the paths with QoS restraints.).

Regarding Claim 28, Morford in view of Melaku discloses **the method according to claim 23, wherein the step of establishing a plurality of label switching paths is: configuring the label switching paths statically at the uplink interface of the edge router** (Morford: Col. 9, lines 50-61. Administrator may supply labels to packets for forwarding. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 29, Morford in view of Melaku discloses **the method according to claim 23, wherein the step of establishing a plurality of label switching paths is: establishing the label switching paths dynamically via constraint- routing label distribution protocol (CR-LDP) or resource reservation protocol-traffic engineering (RSVP-TE) at the uplink interfaces of the edge router** (Morford: Col. 3, lines 61-65. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.).

Regarding Claim 30, Morford in view of Melaku **discloses the method according to claim 23, wherein the step of establishing a plurality of label switching paths further comprises the step of:**
constructing an edge-to-edge label switching path concatenated pipe or a virtual multi- protocol label switching network on the core network by using the label switching paths (Morford: Col. 4, lines 23-25. The core network is MPLS based.).

Regarding Claim 31, Morford in view of Melaku **discloses the method according to claim 23, wherein the step of configuring the attributes of the label switching paths is:**

configuring traffic class (Morford: Col. 7, lines 16-18. Data flows are marked by class.), **priority** (Morford: Col. 6, lines 46-48), **QoS class** (Morford: Col. 6, lines 46-48. QoS may be delay, jitter, or loss.), **bandwidth attribute of the label switching paths by network capacity planning and traffic engineering statistics** (Morford: Col. 6, lines 50-59).

Regarding Claim 32, Morford in view of Melaku discloses **the method according to claim 23, wherein the step of classifying and conditioning the service traffic flows entering into a core network at a downlink interface of an edge router according to the service traffic flow classification table comprises the steps of:**

obtaining the service traffic flow identification (Morford: Col. 10, lines 10-12. Attribute identifiers include service IDs.);

looking up the service traffic flow classification table according to the service traffic flow identification (Morford: Col. 11, lines 55-62 and Col. 12, lines 29-34. Traffic class comprises matching rules stored in a database.);

classifying and conditioning the service traffic flows entering into the core network according to the corresponding service traffic flow information in the service traffic flow classification table (Morford: Col. 7, lines 7-12. Traffic

management device is configured to monitor and manage data flow based on performance attributes.).

Regarding Claim 33, Morford in view of Melaku discloses **the method according to claim 32, wherein the step of classifying and conditioning the service traffic flows entering into the core network according to the corresponding service traffic flow information in the service traffic flow classification table comprises the steps of:**

classifying and marking the service traffic flows according to the corresponding priority and QoS class (Morford: Col. 6, lines 62-67 and Col. 7, lines 1-6. The differentiated services network performs relative priority marking and service class marking.);

shaping and policing the service traffic flows according to the corresponding bandwidth requirement (Morford: Col. 11, lines 17-21. Bandwidth is managed by a default bandwidth management policy.);

selecting the forwarding mode and path of the service traffic flows according to the corresponding outgoing aggregation path information (Morford: Figure 2C. The router may select either access link 21a or 21 b.).

Regarding Claim 34, Morford in view of Melaku discloses **the method according to claim 33, wherein the forwarding mode of the service traffic flow comprises:**

best-effort delivery in accordance with network protocols (Morford: Col. 4, lines 45-50. MPLS may have a QoS class for best-effort traffic.);

delivery through the corresponding label switching paths of this class of traffic (Morford: Col. 7, lines 23-26. A traffic flow may be downgraded (to a lower class of service).).

Regarding Claim 35, Morford in view of Melaku discloses **the method according to claim 34, wherein the step of forwarding the processed service traffic flows by an uplink interface of the edge router according to the attributes of the label switching paths comprises:**

steering the service traffic flow to the egress router of the core network via network protocols when the best-effort delivery in accordance with network protocols is selected as the forwarding mode of the service traffic flow (Morford: Col. 8, lines 3-5. Network may not be differentiated service domain.);

steering the service traffic flow to the egress router of the core network through the label switching path concatenated pipe or the virtual multi-protocol label switching network when the delivery through the corresponding label switching path of this class of traffic is selected as the forwarding mode of the service traffic flow (Morford: Col. 4, lines 23-25. The core network is MPLS based.).

Regarding Claim 36, Morford in view of Melaku discloses **the method according to claim 23, wherein the method further comprises the step of:**

modifying the service traffic flow classification table according to change of the service traffic flow when the service traffic flow is changed (Melaku: [0056]. The database is dynamically updated based on service parameters or changes in services.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 37, Morford in view of Melaku discloses **the method according to claim 36, wherein the step of modifying the service traffic flow classification table when the service traffic flow is changed comprises: obtaining and adding the service traffic flow information of a service session into the service traffic flow classification table when the session is established** (Melaku: [0049]. The mobile user is registered. [0052]. The traffic monitor determines the network elements for the mobile user.);
canceling the service traffic flow information of the service session from the service traffic flow classification table when the service session is ended (Melaku: [0062]. The presence of a user is determined (and thus absence).).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 38, Morford discloses **an apparatus for providing quality of service (QoS) guarantee** (Morford: Abstract), **wherein the apparatus comprises: a service traffic flow information obtaining means** (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **for creating a service traffic flow classification table** (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.);
a label switching path establishing means, for establishing a plurality of label switching paths (Morford: Figure 1);
a label switching path configuring means, for configuring the attributes of the label switching paths (Morford: Col. 4, lines 23-25. the core network is MPLS-based and uses a QoS mechanism such as DiffServ.);
a first performing means, for classifying and conditioning service traffic flows entering a core network according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.);
and a second performing means, for forwarding the processed service traffic flows according to the attributes of the label switching paths (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **wherein the service traffic flow**

classification table comprises: service traffic flow identification (Morford: Col. 29, lines 48-53. Traffic class) **and bandwidth requirement** (Morford: Col. 30, lines 1-5. Bandwidth utilization).

Morford is silent on storing priority, QoS class, and path information.

Melaku discloses a data base that is updated dynamically in real-time based traffic conditions and QoS related status information (Melaku: [0051]). Quality of service is provided to routers at the edge of a network (Melaku: [0010]). Melaku also discloses this information to be flow ids, priority levels, service types, and QoS parameters (Melaku: Figure 3, [0055]). Further, Melaku discloses paths are grouped based on the database resources (Melaku: [0056]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 39, Morford discloses **an edge router for providing quality of service (QoS) guarantee** (Morford: Abstract; Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **comprises a configuration management interface** (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **wherein the edge router further comprises:**

a service traffic flow information obtaining means (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **for creating a service traffic flow classification table** (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.);

a label switching path establishing means, for establishing a plurality of label switching paths (Morford: Figure 1);

a label switching path configuring means, for configuring the attributes of the label switching paths (Morford: Col. 4, lines 23-25. the core network is MPLS-based and uses a QoS mechanism such as DiffServ.);

a first performing means, for classifying and conditioning the service traffic flows entering into the core network according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.);

and a second performing means, for forwarding the processed service traffic flow according to the attributes of the label switching paths (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **wherein the service traffic flow classification table comprises: service traffic flow identification** (Morford: Col. 29,

lines 48-53. Traffic class) **and bandwidth requirement** (Morford: Col. 30, lines 1-5. Bandwidth utilization).

Morford is silent on storing priority, QoS class, and path information.

Melaku discloses a data base that is updated dynamically in real-time based traffic conditions and QoS related status information (Melaku: [0051]). Quality of service is provided to routers at the edge of a network (Melaku: [0010]). Melaku also discloses this information to be flow ids, priority levels, service types, and QoS parameters (Melaku: Figure 3, [0055]). Further, Melaku discloses paths are grouped based on the database resources (Melaku: [0056]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Regarding Claim 40, Morford discloses **a system for providing quality of service (QoS) guarantee** (Morford: Abstract), **comprises a service control equipment, a resource control equipment, and an edge router** (Morford: Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **wherein the edge router comprises:**
a service traffic flow information obtaining means (Morford: Col. 7, lines 7-9. This is consistent with the traffic management device.), **for creating a service traffic flow**

classification table (Morford: Col. 11, lines 9-14. Service identification tables are created to identify a particular service type based on the data flow.);

a label switching path establishing means, for establishing a plurality of label switching paths (Morford: Figure 1);

a label switching path configuring means, for configuring the attributes of the label switching paths (Morford: Col. 4, lines 23-25. the core network is MPLS-based and uses a QoS mechanism such as DiffServ.);

a first performing means, for classifying and conditioning the service traffic flows entering into the core network according to the service traffic flow classification table (Morford: Figure 2B and Col. 7, lines 57-59. The traffic management device may be located between the access link and router (of Figure 2B), thus being in the downlink stream. Col. 7, lines 7-12. Traffic management device is configured to monitor and manage data flow based on performance attributes.);

and a second performing means, for forwarding the processed service traffic flow according to the attributes of the label switching paths (Morford: Traffic management device adds tags for outbound packets from egress interface of router. Col. 8, lines 15-19; The functionality of the traffic management device may be incorporated into a network device such as a router.), **wherein the service traffic flow classification table comprises: service traffic flow identification** (Morford: Col. 29, lines 48-53. Traffic class) **and bandwidth requirement** (Morford: Col. 30, lines 1-5. Bandwidth utilization).

Morford is silent on storing priority, QoS class, and path information.

Melaku discloses a data base that is updated dynamically in real-time based traffic conditions and QoS related status information (Melaku: [0051]). Quality of service is provided to routers at the edge of a network (Melaku: [0010]). Melaku also discloses this information to be flow ids, priority levels, service types, and QoS parameters (Melaku: Figure 3, [0055]). Further, Melaku discloses paths are grouped based on the database resources (Melaku: [0056]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Morford to include the dynamically-updated database as taught by Melaku. This benefits the method by providing quality of service in data services supplied to users and network devices at the edge of networks, and to avoid bottlenecking (Melaku: [0009]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN ELLIOTT whose telephone number is (571)270-7163. The examiner can normally be reached on Monday thru Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung Moe can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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